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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,033	03/05/2002	Stephen F. Fulghum	301489.1003-113	7761

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EXAMINER	
LEUBECKER, JOHN P	

ART UNIT	PAPER NUMBER
3739	

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/092,033	FULGHUM, STEPHEN F.	
	Examiner	Art Unit	
	John P. Leubecker	3739	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *12-20 and 27-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Drawings

1. The previous objection under 37 CFR 1.83(a) is being withdrawn since it has been determined that there is no support for an embodiment including the diode laser light source. The addition of such could constitute new matter. The Examiner apologizes for making the objection in the first place.

Claim Objections

2. Claim 1 is objected to because of the following informalities: in line 8, "an image sensor a single image detector" is improper. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-11 and 21-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites a diode laser light source for producing excitation light. The invention, and thus the disclosure, is specifically directed to use of an arc lamp as the excitation light source. Note at least page 8, lines 23-24 and page 10, lines 16-18 which describe the invention as requiring an arc lamp. The only mention of a laser diode in the specification is on

page 10, lines 13-16, wherein it is mention as one of two other light sources that have previously been used. Thus, the disclosure fails to provide adequate written description of how a laser diode is part of the disclosed invention or could be used in the disclosed invention.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-9, 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic et al. (U.S. Pat. 5,827,190) for the reasons set forth in numbered paragraph 11 of the previous Office Action, paper number 11.

7. Claims 10, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic et al. in view of Imaizumi et al. (U.S. Pat. 6,293,911) for the reasons set forth in numbered paragraph 12 of the previous Office Action, paper number 11.

8. Claims 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic et al. in view of Imaizumi et al. and further in view of Perelman et al. (U.S. Pat. 6,091,984) for the reasons set forth in numbered paragraph 13 of the previous Office Action, paper number 11.

9. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic et al. in view of Imaizumi et al. and further in view of Poindexter et al. (U.S. Pat. 5,979,423) for the reasons set forth in numbered paragraph 15 of the previous Office Action, paper number 11.

10. Claims 1-6, 8-11, 21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (U.S. Pat. 5,749,830) in view of Poindexter et al. (U.S. Pat. 5,979,523).

Referring mainly to Figure 51, Kaneko et al. disclose a laser light source (904) for producing light having a wavelength in a range of 300 to 420 nm (col.7, lines 35-38), a second light source (905), an optical combiner (915,916), a common optical path coupled to an optical guide (901), a single image detector (902), and a data processor (908,913). Kaneko et al. fails to explicitly disclose that the laser light source is a diode laser light source (instead, a He-Cd laser is exemplified as being just one source that operates in the necessary wavelength range). However, certain diode laser light sources are known to operate in the wavelength range of 300 to 500 nm. Poindexter et al. is just one example of a teaching that a GaN diode laser, which operates within the claimed wavelength range, is a suitable source of excitation light (col.2, lines 57-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used any known suitable light source (including the one taught by Poindexter et al.) that operated within the range of 300-500 nm in the Kaneko et al. device as a matter of design choice. One would be motivated to use a diode laser over a conventional laser or other light source due to its efficient, low power and stable emission of light.

As to claim 2, note superimpose circuit (928, col.62, lines 61-67). As to claim 3, note that the solid state imaging element (902) can be a CCD (note at least col.21, line 64). As to claim 4, note (831) in Figure 49. As to claim 5, note that the CCD is at the distal tip of the endoscope. As to claim 6, note column 63, lines 19-27. As to claim 9, note red filter in RGB filter (918). As to claim 10, note (920). As to claim 11, since the reference and excitation lights share a common optical path, they have the same angular distribution. As to claim 21, a CCD is pixellated. As to claims 23 and 24, obvious choice of the diode laser source as taught by Poindexter et al. would meet these limitations.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Poindexter et al. and further in view of Perelman et al. (U.S. Pat. 6,091,984).

Kaneko et al. teach a device that uses, for example a CCD, for the image sensor but fails to disclose all other known image sensors that can alternatively used. Perelman et al. teaches what is known by all of those of ordinary skill—the alternative use of either a CCD or CMOS image sensor (note col. 4, lines 26-34). CMOS technology is not new and in certain arrangements has cost advantages and improved functionality over CCD technology. It would therefore have been obvious to one of ordinary skill in the art to have used a CMOS image sensor instead of a CCD image sensor for the reasons set forth above.

12. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Poindexter et al. and further in view of Groner et al. (U.S. Pat. 6,104,939).

Kaneko et al. provides reference to a xenon light source *as an example* (note col.7, line 31). Groner et al. also teaches use of a xenon light source in addition to many alternatives including a mercury arc lamp and a laser diode (col. 24, line 55 to col.25, line 4). It would have been obvious to one of ordinary skill in the art as a matter of design choice to use any known alternative type of light source as taught by Groner et al.

Response to Arguments

13. Applicant's arguments filed August 30, 2004 have been fully considered but they are not persuasive.

Regarding the rejection 35 U.S.C. 112, first paragraph, Applicant suggests that the Examiner has ignored the "teaching regarding numerous other embodiments using other light sources". The Examiner has not ignored anything, but instead has interpreted the specification as any reasonable person would. Contrary to Applicant's contention, the reference to Wang et al. at page 5, lines 4-9 of the specification is referring to the *wavelength of light* for the preferred embodiment:

> "In a preferred embodiment, near ultraviolet light is chosen as the excitation wavelength, as described in Wang, et al. US Provisional Application No. 60/072,455" (page 5, lines 4-5).

Thus, Applicant's specification in no instance refers to the argon-ion laser as a preferred embodiment as the UV source. Accordingly, mention of other light sources (i.e., laser diodes) in correspondence with the Wang et al. reference does not suggest or imply use of these light sources in the present invention.

Instead, Applicant states:

> "The systems in accordance with the present invention uses a mercury arc lamp as a source of UV excitation with a spectral band around the 365 nm mercury line. The mercury arc source is smaller, and less expensive than the argon-ion laser, requires relatively little power and is air-cooled." (page 10, lines 16-20).

This would imply to the reasonable person that argon-ion lasers and laser diodes have been considered in the art but are not for use in the present invention.

As Applicant has pointed out at page 12, lines 2-4:

> "The CCD detector in this type of endoscope is sensitive to all wavelengths between 400 nm and 700 nm, but is insensitive to UV excitation wavelengths around 365 nm which are used to excite the autofluorescence.".

This would support use of the mercury arc lamp (spectral band around 365 nm) but not support use of a GaN laser diode operating a wavelengths in the range of 380 nm to 420 nm. This is the basis for the Examiner's rejection under 35 USC 112, first paragraph. Although the laser diode is mentioned with respect to prior knowledge, Applicant has not provided any support or enabling embodiment that would include a laser diode as the light source. Thus, the written description is lacking. It would appear that the laser diode would not be appropriate for the CCD used by Applicant since an overlap of excitation wavelengths with the imaging wavelengths could cause interference or degradation of the image.

And if Applicant wants to rely on the Wang et al. disclosure (US 60/072,455) as teaching that the range of 300-420 nm is acceptable for the excitation light (as erroneously reported on page 5, lines 6-9), it must be pointed out what this reference really teaches:

> "In addition, it is surprising that reflected 370 nm excitation light did not completely flood the CCD, obscuring the fluorescence signal. This results from the fact that the CCD spectral response falls off to zero quickly at wavelengths below 400 nm." (within first full paragraph of page 3 of US 60/072,455).

This clearly supports Applicant's intention of using a mercury arc lamp and would teach against use of a light source that produced wavelengths greater than 400 nm (e.g., GaN laser diodes). Without a specific reference to how a diode laser would be incorporated into the invention (i.e., differences in structure and/or function), the description is deemed to be deficient.

Therefore, the Examiner has maintained the rejection of claims 1-11 and 21-26 under 35 USC 112, first paragraph.

It is noted that the Examiner is inexplicably required to examine claims even if inappropriate subject matter (e.g., new matter) is included. Therefore, the rejections made in the previous Office Action, paper number 11, addressed the combination of elements including the diode laser light source. Accordingly, these claims are again addressed in this way.

Due to the amendment to claim 1 with respect to the specific wavelengths, the Kaneko et al. reference is being applied above. The rejection over Imaizumi et al. has been withdrawn.

No arguments with regards to the rejection of the claims over Palcic et al. appears in Applicant's remarks filed August 30, 2004. Hence, no discussion from the Examiner is warranted.

Conclusion

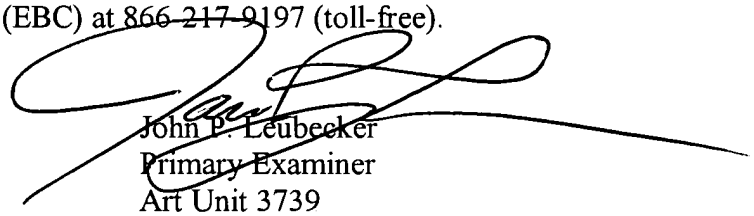
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wagnieres et al. (U.S. Pat. 6,148,227)—note teaching to use a mercury-xenon lamp, laser or laser diode (col.3, lines 39-42).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Leubecker whose telephone number is (571) 272-4769. The examiner can normally be reached on Monday through Friday, 6:00 AM to 2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda C.M. Dvorak can be reached on (571) 272-4764. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John P. Leubecker
Primary Examiner
Art Unit 3739

jpl